

## REMARKS

In this Amendment, Applicant amends claim 1 in order to more appropriately define the present invention and amends claim 6 to correct a typographical error. No new matter is added. As a result of this Amendment, claims 1-25 are present in the application, with claims 10-25 withdrawn from consideration as directed towards an unelected invention.

In the outstanding Office Action, the Examiner rejected claims 1-3 under 35 U.S.C. § 103(a) as unpatentable over Fukunaka et al. (Japanese Patent Pub. No. 2000-012919) in view of Hattori et al. (Jap. Patent Pub. No. 10-227845) further in view of IBM Technical Disclosure Bulletin, vol. 15, issue 6, 1972 (hereinafter "IBM"); and rejected claims 5-7 under 35 U.S.C. § 103(a) as being unpatentable over Fukunaka et al. in view of Hattori et al. further in view of IBM and further in view of Partin et al. (U.S. Patent No. 4,978,938). The Examiner further indicated that claims 4, 8, and 9 were drawn to allowable subject matter. Applicant appreciates the indication of allowable subject matter in this application.

The rejections of claims 1-3 and 5-7 are respectfully traversed.

To establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), each of three requirements must be met. First, the references, taken alone or combined, must teach or suggest each and every element recited in the claims. (See M.P.E.P. § 2143.03 (8th Ed. 2001).) Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of these

requirements must "be found in the prior art, and not be based on applicant's disclosure." M.P.E.P § 2143 (8th Ed. 2001).

Independent claim 1, as amended, recites a magnetoelectric transducer comprising, among other things, "that an insulating portion and each of said conductive layers are formed of a sintered compact, that the sintered compact of said conductive layer is mainly included of metal of a high melting point of 1,600°C or higher and ceramic powders, and that the sintered compact of said conductive layer contains 10% to 90% of the high-melting point metal."

The Examiner concedes that "Fukunaka et al. does not disclose expressly conductive layers formed on the side surfaces of the transducer, nor does it disclose the conductive layers formed of a sintered compact which includes a high melting-point with a given percentage composition." Office Action at page 2. However, the Examiner attempts to cure these deficiencies by stating that "Hattori et al., Fig. 2, discloses ... conductive layers (7) formed on the side surfaces" and further stating that "IBM (Page 2, lines 9-14) discloses a conductive sintered compact which includes a metal with melting point greater than 1600°C with a percentage by weight of 97%, which would be known in the art to be reducible to about 90%."

Applicant respectfully disagrees with the Examiner's statement. IBM discloses a package for integrated circuits assembled by joining flat layers. More specifically, IBM discloses a connecting material with flat sheets of fired alumina and conductor lines patterns that are screen printed onto the sheets using a paste consisting of a viscous volatile vehicles and particles of molybdenum (97% by weight) and manganese (7% by weight). The sheets are then heated at 1200 degrees C to burn off the paste vehicle,

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and to sinter the molybdenum and manganese particles to each other and to the surface of the ceramic layer.

However, IBM does not disclose at least the sintered compact contains 10% to 90% of the high-melting point metal. The Examiner recognizes this deficiency and attempts to cure it by alleging it would be known in the art to reduce 97% by weight of manganese to about 90%. However, the Examiner has stated no motivation for doing so. The Examiner merely alleges that "the motivation for [combining Hattori et al. with Fukunaka and IBM] would have been to form a magnetoelectric transducer with the enhanced thermal properties of the sintered conductive and insulating components (IBM, page 2, lines 1-8).

Applicant contests the Examiner's allegation as Applicant has already demonstrated herein that the cited references do not teach or suggest each and every element of Applicant's invention. The Examiner's statement is an unsubstantiated generalization of questionable relevance to Applicant's claims. Applicant respectfully refers the Examiner to the February 21, 2002 Memorandum from USPTO Deputy Commissioner for Patent Examination Policy, Stephen G. Kunin, regarding "Procedures for Relying on Facts Which are Not of Record as Common Knowledge or for Taking Official Notice." In relevant part, the Memorandum states, "If the examiner is relying on personal knowledge to support the finding of what is known in the art, the examiner must provide an affidavit or declaration setting forth specific factual statements and explanation to support the finding" (Memorandum, p. 3). Applicants submit that the Examiner made a generalized statement regarding Applicant's claims without any documentary evidence to support it. Applicant traverses the Examiner's presumed

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taking of "Official Notice," noting the impropriety of this action, as the Federal Circuit has "criticized the USPTO's reliance on 'basic knowledge' or 'common sense' to support an obviousness rejection, where there was no evidentiary support in the record for such a finding." Id. at 1. Applicant submits that "[d]eficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense'." In re Lee, 61 USPQ2d 1430, 1432-1433 (Fed. Cir. 2002), quoting In re Zurko, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). Should the Examiner maintain the rejection after considering the arguments presented herein, Applicant submits that the Examiner must provide "the explicit basis on which the examiner regards the matter as subject to official notice and [allow Applicants] to challenge the assertion in the next reply after the Office action in which the common knowledge statement was made" (Id. at 3, emphasis in original), or else withdraw the rejection.

Furthermore, the Examiner has mischaracterized the teachings of IBM as recited in lines 1-8 on page 2. IBM at page 2, lines 1-8 discloses "[t]he connecting material must not dissolve or otherwise attack the surface material of the connection site. If a gas is released during the joining of the interconnections, or if a corrosive residue is left, the sealing of the package must be done in a separate step, after joining and any required cleaning step." Applicant respectfully submit that there is no alleged mention of "form[ing] a magnetoelectric transducer with enhanced thermal properties of the sintered conductive and insulating components."

Moreover, for argument sake even if the Examiner's allegations were accepted as true, one skilled in the art would immediately recognize the need to *increase* the percentage of the metal to as high a value as possible to *enhance* the thermal

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properties of the sintered components. Thus, IBM, in fact, teaches away from the present invention, which claims sintered compact with 10% to 90% of the high-melting point metal.

Finally, one skilled in the art would only arrive at the present claimed invention by consulting Applicants' disclosure. As stated in the specification, "cracking and warpage is prone to occur in the substrate during baking because of a difference in the contraction factor between the high-melting point metal and alumina." Specification at page 13. Applicants discovered that "[t]o restrain this, the sintered compacts of the conductive layers preferably contain 10% or more and 90% or less of W, high-melting-point metal." Id. Therefore, the only way to construct the claimed invention from the cited references would be to rely on the actual teachings in the application. Such reliance, however, would constitute improper hindsight reasoning.

In making the various references to the specifications set forth herein, it is to be understood that Applicant is in no way intending to limit the scope of the claims to the exemplary embodiments described in the specification. Rather, Applicant expressly affirms that he is entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

In summary, the cited references, either taken alone or in combination, do not teach each and every element of claim 1. Further, the Examiner has failed to provide requisite motivation or reason for one of ordinary skill in the art to modify the references, or combine them, to produce the present claimed invention. Therefore, the Examiner has failed to establish a *prima facie* case of obviousness for independent claim 1. Accordingly, Applicant requests the Examiner to withdraw the rejection of the claim and

the claim be allowed. Claims 2 and 3 depend from claim 1 and are also allowable at least in view of their dependency from claim 1.

The Examiner rejected claims 5-7 under 35 U.S.C. § 103(a) as being unpatentable over Fukunaka et al. in view of Hattori et al. further in view of IBM and further in view of Partin et al.

Claims 5-7 depend from claim 1. As discussed above, Fukunaka et al., Hattori et al., and IBM, either taken alone or in combination, at least fail to teach or suggest that “an insulating portion and each of said conductive layers are formed of a sintered compact, that the sintered compact of said conductive layer is mainly included of metal of a high melting point of 1,600°C or higher and ceramic powders, and that the sintered compact of said conductive layer contains 10% to 90% of the high-melting point metal,” as recited in claim 1. Partin et al. fails to cure this deficiency of Fukunaka et al., Hattori et al., and IBM. Partin et al. does not teach or suggest any sintered compact. Therefore, claim 1 is not rendered obvious by the cited references, either individually or in combination, and the rejection of claim 1 under 35 U.S.C. § 103(a) is improper.

“If an independent claim is nonobvious under 35 U.S.C. § 103(a), then any claim depending therefrom is nonobvious.” M.P.E.P. § 2143.03. Accordingly, Applicant respectfully submits that claims 5-7, which depend directly or indirectly from claim 1, are also allowable at least in view of their dependency from allowable claim 1.

Further, claims 5 and 7 recite, among other things, “an InSb-based thin film having an electron mobility of 10,000 cm<sup>2</sup>/V/sec or more is formed on the inorganic layer” and “an InSb-based thin film having an electron mobility of 10,000 cm<sup>2</sup>/V/sec or more is formed on the resin layer,” respectively. The Examiner states that “Partin et al.

discloses (col. 4, lines 37-43) (col. 5, lines 53-55) an InSb film with electron mobility ranging from 10,000 to 32,000 cm<sup>2</sup>/V/sec on an inorganic insulating substrate, which, as is well known in the art, may comprise silica, alumina or (sic) glass.” Office Action at page 3. However, the Examiner has taken the teachings of Partin et al. out of context. Partin et al. discloses “[s]ince the magnetoresistance effect is proportional to electron mobility squared for small magnetic fields, InSb is highly preferable. However, the difficulty of growing semiconductors in general, and the fact that *there is no suitable, lattice-matched, insulating substrate upon which it may be grown*, led us to try growing Bi films.” Id. at col. 5, lines 11-18 (emphasis added). Therefore, Partin et al., in fact, teach away from the growing InSb films on an insulating substrate. Accordingly, there is no motivation or suggestion in Partin et al. for forming InSb films on an insulating substrate. Further, the Examiner has not even addressed the recitation of an InSb film “formed on the resin layer,” as recited in claim 7.

### **Conclusion**

In view of the foregoing, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

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Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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